AMENDMENTS TO THE DRAWINGS

The attached sheets of drawings are formal drawings to replace originally-filed Figs. 1-16. As requested by the Examiner, Applicants have amended Fig. 15 to include imaginary cylinders with reference numbers 224 and 225. As also requested by the Examiner, Applicants have amended Fig. 15 to include the correct hatching for gasket 226 as a heat insulative material. As further requested by the Examiner, Applicants have added new Fig. 15A as an enlargement of original Fig. 15 to clearly show the hatching of gasket 226. No new matter has been added. Applicants respectfully request entry of the enclosed drawings.

Attachment: Replacement Drawing Sheets

REMARKS/ARGUMENTS

Status of the Claims

Claims 1-4, 6-18, 20-23, and 25-57 are pending. Applicants have canceled Claims 5, 19, and 24, and thus, the rejections of Claims 5, 19, and 24 are moot. Applicants have amended Claims 1, 14, 17-18, 20-22, 25-30, 32, 33-34, 36-37, 39, 53, and 56-57. Applicants appreciate the Examiner's indication that Claims 14, 17, 18, 33, 36, 37, 39, 53, 56, and 57 specify allowable subject matter. Applicants respectfully request reconsideration and allowance of the remaining pending claims.

Claim Rejections - 35 U.S.C. § 102(b)

Independent Claim 1

Claims 1 stands rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 1,644,595 ("Karg"). Amended Claim 1 specifies "a heater in the discharge duct shielded from the discharge outlet by at least one interior wall of the discharge duct, the heater located in a substantially straight portion of the discharge duct."

As shown in Fig. 1, Karg discloses a heating unit 41 positioned in a casing 20. The casing 20 includes a vertically-oriented, substantially straight portion coupled to a forwardly-extending tapered spout 38. However, the heating unit 41 extends above the forwardly-extending tapered spout 38 so that the heating unit 41 is not shielded from the forwardly-extending tapered spout 38 by an upper part of the wall 24.

Similarly, as shown in Fig. 5, Karg discloses a heating unit 41 positioned in a casing 48. The casing 48 is constructed with walls 50, 51, 53, 54 that are all generally curved. Assuming *arguendo* that the casing 48 includes a very small section that could be considered to be substantially straight, the heating unit 41 extends both above and below this very small, substantially straight portion. On the top, the heating unit 41 extends into the elbow portion formed by walls 53 and 54. On the bottom, the heating unit 41 extends into the bulged lower portion of the heating chamber 58 (as labeled in Fig. 10). As a result, the heating unit 41 is not located in a substantially straight portion of the casing 48.

Accordingly, Karg does not disclose "a heater in the discharge duct shielded from the discharge outlet by at least one interior wall of the discharge duct, the heater located in a substantially straight portion of the discharge duct," as required by Claim 1. Therefore, independent Claim 1 and dependent Claims 2-4, 6-13, and 15-16 are allowable.

Dependent Claims 2-4, 6, 8 and 9

Claims 2-4, 6, 8, and 9 stand rejected under 35 U.S.C. § 102(b) as being anticipated by Karg. Claims 2-4, 6, 8, and 9 depend from independent Claim 1, and are therefore allowable for the reasons set forth above with respect to Claim 1. Claims 2-4, 6, 8, and 9 also specify additional patentable subject matter not specifically discussed herein.

Dependent Claims 25-27

Claims 25-27 stand rejected under 35 U.S.C. § 102(b) as being anticipated by Karg. Claims 25-27 depend from independent Claim 20, and are therefore allowable for the reasons set forth above with respect to Claim 20. Claims 25-27 also specify additional patentable subject matter not specifically discussed herein.

Independent Claim 38

Claim 38 stands rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 1,982,139 ("Kercher"). Claim 38 specifies "the discharge aperture of the cover having a larger cross-sectional area than the discharge outlet of the fan housing such that edges of the cover defining a periphery of the discharge aperture are recessed with respect to the discharge outlet of the fan housing."

As shown in Figs. 1 and 2, Kercher discloses a perforated grille 16, a discharge opening 28, and a discharge outlet 43. Kercher discloses that air is drawn in through a lower portion of the grille 16, through a conduit 33 and an opening 32, and is delivered by an impeller through a discharge opening 28 and openings in the upper portion of the grille 16. By virtue of the function of the discharge opening 28 to discharge air from a casing 22 through the grille 16 and from the upper portion of the housing, the upper portion 43 of the casing 22 can be designated generally as a "discharge portion." *Kercher*, col. 2, lines 23-33. In the annotated Fig. 2 of Kercher on page 7 of the Office action, the outer edge of the grille

16 is identified as a "recessed edge." The only recessed edge of Kercher is positioned along the outer periphery of the grille 16, not along the periphery of the discharge opening 28. In other words, the outer edge of the grille 16 is the edge of the grille 16 in its entirety, not the edge of the discharge opening 28, as specified by Claim 38. The outer edge of the discharge opening 28 lies flush with the edge of the discharge portion 43, providing no recess from it.

Accordingly, Kercher does not disclose "the discharge aperture of the cover having a larger cross-sectional area than the discharge outlet of the fan housing such that edges of the cover defining a periphery of the discharge aperture are recessed with respect to the discharge outlet of the fan housing," as required by Claim 38. Therefore, independent Claim 38 and dependent Claims 40-52 and 54-55 are allowable.

Dependent Claims 40-43 and 45

Claims 40-43 and 45 stand rejected under 35 U.S.C. § 102(b) as being anticipated by Kercher. Claims 40-43 and 45 depend from independent Claim 38, and are therefore allowable for the reasons set forth above with respect to Claim 38. Claims 40-43 and 45 also specify additional patentable subject matter not specifically discussed herein.

Claim Rejections - 35 U.S.C. §103(a)

Independent Claim 20

Claims 20 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Karg in view of U.S. Patent No. 3,025,382 ("Eisele"). Claim 20 has been amended into independent form by incorporating the limitations of Claim 19, which has been cancelled. Claim 20 specifies "the discharge duct having a first cross-sectional area taken along a plane normal to the discharge duct at the heater, the discharge outlet having a second cross-sectional area taken along a plane normal to airflow passing through the discharge outlet, the second cross-sectional area being less than the first cross-sectional area; a ratio of the first cross-sectional area to the second cross-sectional area being no greater than 4:1 and no less than 1.125:1."

Independent Claim 20 and dependent Claims 21-23 recite ranges of values for the ratio of the first cross-sectional area to the second cross-sectional area, where the first cross-

sectional area is taken at the heater and the second cross-sectional area is taken at the discharge outlet. As detailed in the "Declaration of Ken Jonas under 35 C.F.R. § 1.132" filed with this Amendment, the ratio of the two cross-sectional areas is one design variable in a complex design problem. The design variables can include, without limitation, blower speed, heater placement, duct cross-sectional area, and duct shape. The results manifested in the claimed apparatus are better than would be expected from merely "optimizing" the ratio of the cross-sectional areas. Also, the unexpected results of the claimed apparatus were obtained through the complete design of a new apparatus, rather than optimizing one variable of the prior art through routine experimentation. In addition, the inventors had no reason to believe that providing the apparatus with a ratio within the ranges specified by Claims 20-23 would simultaneously solve problems relating to overheating and resonance. According to § 716.02(a) of the MPEP, results that are greater than expected are evidence of non-obviousness. Moreover, none of the prior art of record teaches or suggests the ratios defined by Claims 20-23. Accordingly, independent Claim 20 and dependent Claims 21-23, 25-32, and 34-35 are allowable.

Dependent Claims 7, 21-23, and 28

Claims 7, 21-23, and 28 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Karg in view of U.S. Patent No. 3,025,382 ("Eisele"). Claims 7, 21-23, and 28 depend from independent Claims 1 and 19, and are therefore allowable for the reasons set forth above with respect to Claims 1 and 19. Claims 7, 21-23, and 28 also specify additional patentable subject matter not specifically discussed herein.

Dependent Claims 10 and 29

Claims 10 and 29 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Karg in view of U.S. Patent No. 2,445,250 ("Steingruber"). Claims 10 and 29 depend from independent Claims 1 and 19, and are therefore allowable for the reasons set forth above with respect to Claims 1 and 19. Claims 10 and 29 also specify additional patentable subject matter not specifically discussed herein.

Dependent Claims 13 and 32

Claims 13 and 32 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Karg in view of Canadian Patent No. CA679120. Claims 13 and 32 depend from independent Claims 1 and 19, and are therefore allowable for the reasons set forth above with respect to Claims 1 and 19. Claims 13 and 32 also specify additional patentable subject matter not specifically discussed herein.

Dependent Claims 15-16 and 34-35

Claims 15-16 and 34-35 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Karg in view of U.S. Patent No. 1,991,280 ("Hynes"). Claims 15-16 and 34-35 depend from independent Claims 1 and 19, and are therefore allowable for the reasons set forth above with respect to Claims 1 and 19. Claims 15-16 and 34-35 also specify additional patentable subject matter not specifically discussed herein.

Independent Claim 38

Claim 38 also stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Karg in view of Kercher. Claim 38 specifies "the discharge aperture of the cover having a larger cross-sectional area than the discharge outlet of the fan housing such that edges of the cover defining a periphery of the discharge aperture are recessed with respect to the discharge outlet of the fan housing."

On page 12 of the Office action, the Examiner states that the claims differ from the previously-cited prior art (presumably including the Karg reference) in calling for a cover with a discharge aperture with a larger cross-sectional area than the fan housing discharge outlet such that the cover's edges that define a periphery of the discharge aperture are recessed with respect to the discharge outlet.

Kercher does not cure the deficiencies of Karg and the other previously-cited prior art. Kercher does not teach or suggest recessing the edges that define a periphery of a discharge aperture. As shown in Figs. 1 and 2, Kercher teaches a perforated grille 16, a discharge opening 28, and a discharge outlet 43. Kercher teaches that air is drawn in through a lower portion of the grille 16, through a conduit 33 and an opening 32, and is delivered by an

impeller through a discharge opening 28 and openings in the upper portion of the grille 16. By virtue of the function of the discharge opening 28 to discharge air from a casing 22 through the grille 16 and from the upper portion of the housing, the upper portion 43 of the casing 22 can be designated generally as a "discharge portion." *Kercher*, col. 2, lines 23-33. In the annotated Fig. 2 of Kercher on page 7 of the Office action, the outer edge of the grille 16 is identified as a "recessed edge." The only recessed edge of Kercher is positioned along the outer periphery of the grille 16, not along the periphery of the discharge opening 28. In other words, the outer edge of the grille 16 is the edge of the grille 16 in its entirety, not the edge of the discharge opening 28, as specified by Claim 38. The outer edge of the discharge opening 28 lies flush with the edge of the discharge portion 43, providing no recess from it.

Accordingly, neither Karg nor Kercher, alone or in combination, teaches or suggests "the discharge aperture of the cover having a larger cross-sectional area than the discharge outlet of the fan housing such that edges of the cover defining a periphery of the discharge aperture are recessed with respect to the discharge outlet of the fan housing," as required by Claim 38.

Dependent Claims 11, 12, 30, 31, 40-43, and 45-50

Claims 11, 12, 30, 31, 40-43, and 45-50 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Karg in view of Kercher. Claims 11, 12, 30, 31, 40-43, and 45-50 depend from independent Claims 1, 19, and 38, and are therefore allowable for the reasons set forth above with respect to Claims 1, 19, and 38. Claims 11, 12, 30, 31, 40-43, and 45-46 also specify additional patentable subject matter not specifically discussed herein.

In addition, Claims 47-50 recite ranges of values for the ratio of the first cross-sectional area to the second cross-sectional area, where the first cross-sectional area is taken at the heater and the second cross-sectional area is taken at the discharge outlet. As detailed in the "Declaration of Ken Jonas under 35 C.F.R. § 1.132" filed with this Amendment, the ratio of the two cross-sectional areas is one design variable in a complex design problem. The design variables can include, without limitation, blower speed, heater placement, duct cross-sectional area, and duct shape. The results manifested in the claimed apparatus are better than would be expected from merely "optimizing" the ratio of the cross-sectional areas. Also, the unexpected results of the claimed apparatus were obtained through the complete

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design of a new apparatus, rather than optimizing one variable of the prior art through routine experimentation. In addition, the inventors had no reason to believe that providing the apparatus with a ratio within the ranges specified by Claims 47-50 would simultaneously solve problems relating to overheating and resonance. According to § 716.02(a) of the MPEP, results that are greater than expected are evidence of non-obviousness. Moreover, none of the prior art of record teaches or suggests the ratios defined by Claims 47-50. Accordingly, dependent Claims 47-50 define additional patentable subject matter.

Allowable Subject Matter

Applicants appreciate the indication that Claims 14, 17, 18, 33, 36, 37, 39, 53, 56, and 57 specify allowable subject matter. Applicants believe that each of these claims, now rewritten in independent form, is in condition for allowance.

CONCLUSION

In light of the above remarks and the "Declaration of Kenneth J. Jonas under 37 C.F.R. § 1.132," Applicants respectfully request reconsideration and allowance of pending Claims 1-4, 6-18, 20-23, and 25-57.

Respectfully submitted,

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